

1 **CLAIMS**

2 What is claimed is:

3 1. A method for processing video data, comprising:

4 receiving a principal video stream from a source;

5 receiving a video sub-stream containing supplemental information associated with
6 the principal video stream;

7 in a single stage operation, performing an operation on the principal video stream
8 and combining the principal video stream with the video sub-stream to produce processed
9 data; and

10 outputting the processed data.

11
12 2. The method according to claim 1, wherein the performing of the operation
13 comprises de-interlacing the principal video stream.

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15 3. The method according to claim 1, wherein the performing of the operation
16 comprises resizing the principal video stream.

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18 4. The method according to claim 1, wherein the performing and the combining
19 involve a single call to memory.

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21 5. The method according to claim 1, wherein the performing and the combining
22 are performed in a YUV color space.

1 6. The method according to claim 1, further including a step of forwarding
2 instructions to a graphics processing module, the instructions informing the graphics
3 processing module how to execute the performing and the combining.

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5 7. The method according to claim 6, wherein the instructions identify a location at
6 which to receive the principal video stream, a location at which to receive the video sub-
7 stream, and a location at which to provide the processed data.

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9 8. The method according to claim 7, wherein the instructions identify a rectangle
10 of data from which to receive the principal video stream within a video stream surface, a
11 rectangle of data from which to receive the video sub-stream within a video sub-stream
12 surface, and a rectangle at which to output the processed data within a destination
13 surface.

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15 9. The method according to claim 1, wherein the video sub-stream includes at
16 least one of: close captioned information; DVD sub-picture information; and PAL
17 teletext information.

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19 10. The method according to claim 1, wherein the performing and the combining
20 are performed on an apparatus that uses a Uniform Memory Architecture (UMA) design.

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22 11. An apparatus for processing video data, comprising:

23 a renderer module;

24 a data processing module; and
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1 an interface module that couples the renderer module to the data processing
2 module,

3 wherein the renderer module includes logic configured to generate and provide
4 instructions to the data processing module to execute at least the following functions in a
5 single stage:

- 6 a) performing an operation on a received principal video stream; and
- 7 b) combining the received principal video stream with a video sub-stream.

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9 12. An apparatus according to claim 11, wherein the performing of the operation
10 comprises de-interlacing the principal video stream.

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12 13. An apparatus according to claim 11, wherein the performing of the operation
13 comprises resizing the principal video stream.

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15 14. The apparatus according to claim 11, wherein the data processing module is
16 configured to execute the performing and the combining using a single call to memory.

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18 15. The apparatus according to claim 11, wherein the performing and the
19 combining are performed in a YUV color space.

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21 16. The apparatus according to claim 11, wherein the instructions provided by the
22 renderer module inform the data processing module how to execute the performing and
23 the combining.

1 17. The apparatus according to claim 16, wherein the instructions identify a
2 location at which to receive the principal video stream, a location at which to receive the
3 video sub-stream, and a location at which to provide the processed data.
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5 18. The apparatus according to claim 17, wherein the instructions identify a
6 rectangle of data from which to receive the principal video stream within a video stream
7 surface, a rectangle of data from which to receive the video sub-stream within a video
8 sub-stream surface, and a rectangle at which to output the processed data within a
9 destination surface.
10

11 19. The apparatus according to claim 11, wherein the video sub-stream includes at
12 least one of: close captioned information; DVD sub-picture information; and PAL
13 teletext information.
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15 20. The apparatus according to claim 11, wherein the apparatus is configured to
16 operate using a Uniform Memory Architecture (UMA) design.
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18 21. The apparatus according to claim 11, wherein the data processing module
19 comprises a graphics processing module.
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21 22. The apparatus according to claim 21, wherein the graphics processing module
22 is configured to execute video processing tasks using a graphics pipeline.
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24 23. The apparatus according to claim 11, wherein the data processing module
25 includes multiple texturing units, wherein a first texturing unit is allocated to a

1 component of the received video stream, and a second texturing unit is allocated to the
2 received video sub-stream.

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4 24. The apparatus according to claim 23, wherein the data processing module is
5 configured to execute the performing and the combining in a single stage by processing
6 video data obtained from the first and second texturing units substantially in parallel.

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8 25. An apparatus for processing video data, comprising:

9 a memory;

10 a computer processing module for controlling the apparatus, the computer
11 processing module being coupled to the memory;

12 a renderer module;

13 a graphics processing module coupled to same memory as the computer
14 processing module; and

15 an interface module that couples the renderer module to the graphics processing
16 module,

17 wherein the renderer module includes logic configured to generate and provide
18 instructions to the data processing module to execute at least the following functions in a
19 single stage:

20 a) performing an operation on a received principal video stream; and

21 b) combining the received principal video stream with a video sub-stream,

22 wherein the graphics processing module includes logic configured to receive the
23 instructions, and in response thereto, execute the performing and the combining.

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25 26. An apparatus for processing video data, comprising:

1 means for receiving a principal video stream from a source;
2 means for receiving a video sub-stream containing supplemental information
3 associated with the principal video stream;
4 means, in a single stage operation, for performing an operation on the principal
5 video stream and combining the principal video stream with the video sub-stream to
6 produce processed data; and
7 outputting the processed data.

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9 27. A computer readable media having machine readable instructions stored
10 thereon, the instructions comprising:

11 logic configured to receive a principal video stream from a source;
12 logic configured to receive a video sub-stream containing supplemental
13 information associated with the principal video stream;
14 logic configured to, in a single stage operation, perform an operation on the
15 principal video stream and combine the principal video stream with the video sub-stream
16 to produce processed data; and
17 logic configured to output the processed data.